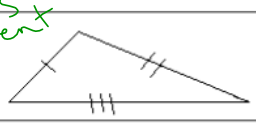
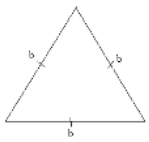
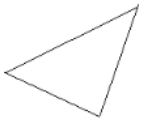
MPM1D 7.1 Angle Relationships in Triangles Date: _____

DEFINE THE FOLLOWING:

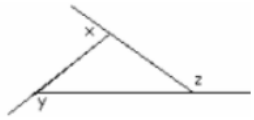
Scalene Triangle	all 3 sides DIFFERENT lengths; all angles different	
Isosceles Triangle	2 sides SAME length	
Equilateral Triangle	all sides SAME length	
Acute Triangle	all angles are LESS than 90°	
Right Triangle	1 angle is 90° exactly	
Obtuse Triangle	1 angle is BIGGER than 90°	

Triangle Theorems - Complete the following on separate piece of paper.

1. Draw a scalene triangle – measure the interior angles of the triangle.

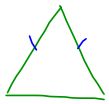
   The sum of these angles = 180°.

2. Extend the line segments that make up the triangle so that they look like the triangle to the right. Measure the values of angles x, y and z.

   The sum of angles x, y and z = 360°.

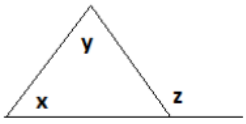
3. Draw an isosceles triangle and measure the interior angles. What do you notice about the relationship between the sides of equal length and the angles opposite them?

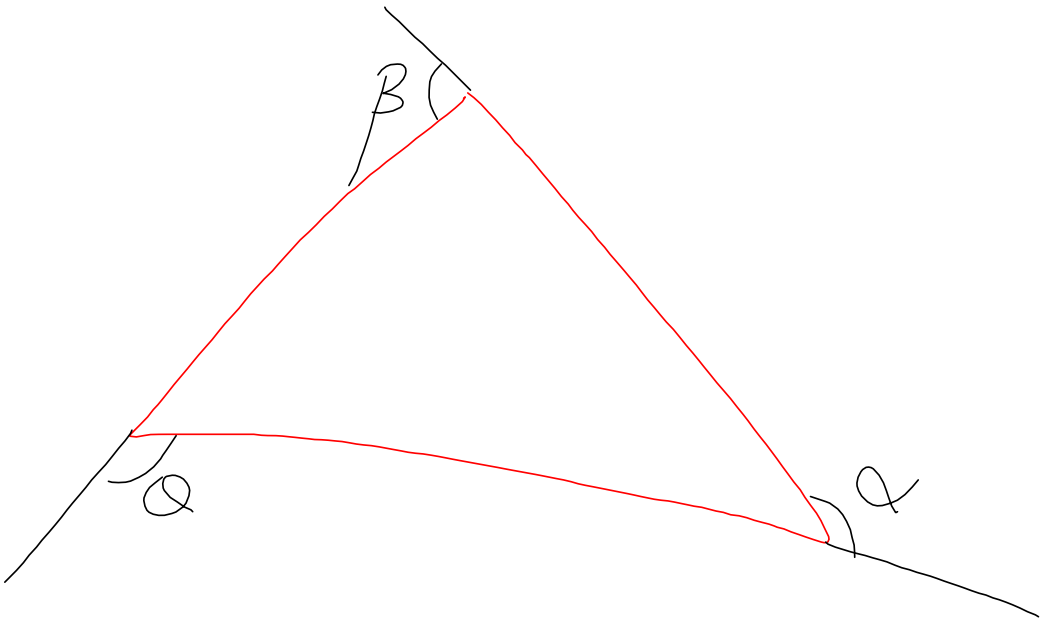
   

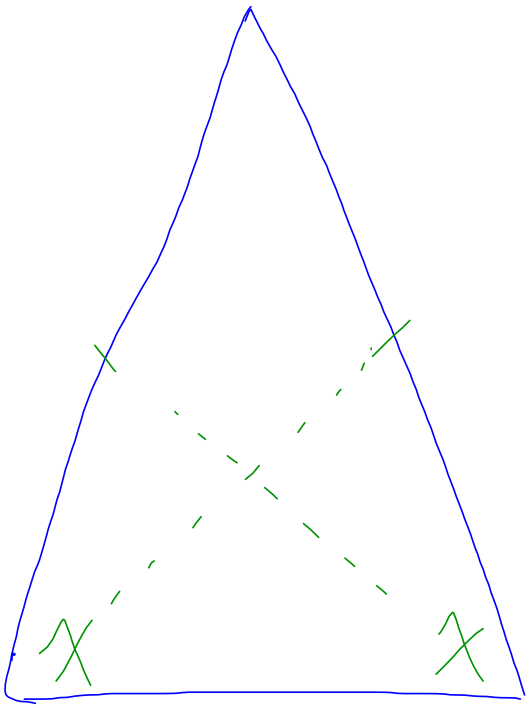
4. If all sides are equal what would the measure of each angle be? 60° $\left(\frac{180}{3} = 60\right)$

5. Draw a triangle and measure angles x, y and z as diagrammed to the right. How are x, y and z related?

   X + Y = Z

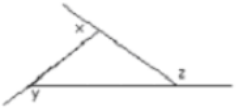

B
Q
α



Triangle Theorems and Their Acronyms

Angle Sum Triangle Theorem (ASTT)

x + y + z = 180°

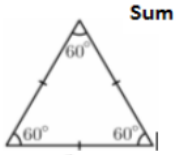


Sum of External Angle Triangle Theorem (SEATT)

x + y + z = 360°

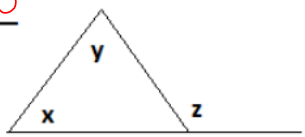
Isoceles Triangle Theorem (ITT)

2 equal angles



Equilateral Triangle Theorem (ETT)

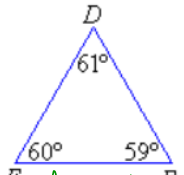
every angle 60°



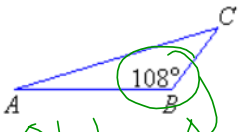
Exterior Angle Triangle Theorem (EATT) x + y = z

QUESTIONS – SHOW WORK ON A SEPARATE PAGE OF PAPER

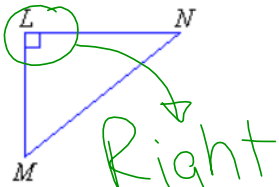
1. Classify each of the following triangles according to the size of their angles

a 

Acute

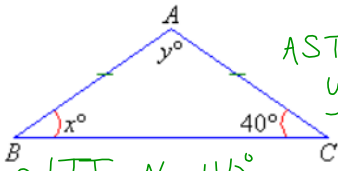
b. 

Obtuse

c. 

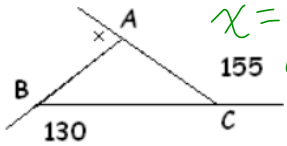
Right

2. Calculate the size of the missing angle in the following triangles – Be sure to state theorems and show work.

a. 

ASTT, y = 180 − 40 − 40 = 100°

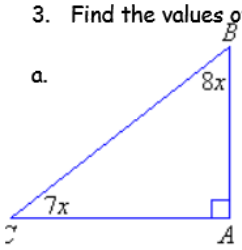
from ITT, x = 40°

b. 

from SEATT, x = 360 − 155 − 130

x = 75°

3. Find the values of the variables in the following triangles – state theorems and show work.

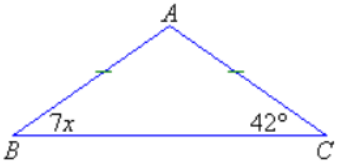
a. 

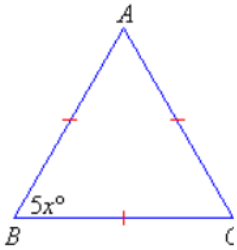
8x + 7x = 90

15x = 90

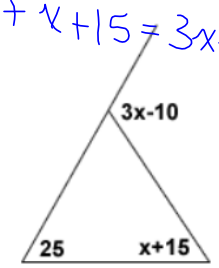
x = 90/15

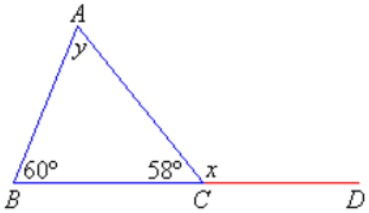
x = 6

b. 

c. 

d. 25 + x + 15 = 3x − 10



e. 

Answers:

1. acute b. obtuse c. right

2. x = 40 y = 100 b. x = 75

3a. 10 **b.** 6 **c.** 12 **d.** 25 **e.** y = 62 x = 122

Homework: p. 371 #(1, 2, 4) **all ab** 5de 11 and 14 and worksheet choose 10 (STATE THEOREMS FOR EVERY QUESTION)